



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/709,324	04/28/2004	Peter Bumbulis	SYB/0100.00	3323
31779	7590	10/05/2006	EXAMINER	
JOHN A. SMART 708 BLOSSOM HILL RD., #201 LOS GATOS, CA 95032-3503			VO, THANH DUC	
			ART UNIT	PAPER NUMBER
			2189	

DATE MAILED: 10/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/709,324

Applicant(s)

BUMBULIS, PETER

Examiner

Thanh D. Vo

Art Unit

2189

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 February 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-47 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10, 12-14, 17-21, 27-37 and 39-43 is/are rejected.
- 7) ☒ Claim(s) 11, 15, 16, 22-26, 38 and 44-47 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 2/24/05, 2/25/05.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is responsive to the Application filed on April 28, 2004. Claims 1-47 are presented for examination. Claims 1-47 are pending.

The IDS's filed on February 24, 2005 and February 25, 2005 have been considered.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2. Claim 28 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. A downloadable set of processor-executable instructions, per se are non-statutory since program instruction, program code, or executable code are intangible and therefore directed to non-statutory subject matter.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-10, 12, 17, 20, 27, 29-37, 41, and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oliver (US Patent 6,029,190).

As per claims 1, 27, and 29, Oliver substantially discloses a system for providing access to data in a multi-threaded computing system, the method comprising:

providing a memory(Fig. 4, item 410) containing pages of data in memory of the multi-threaded computing system (col. 1, lines 13-16, wherein pages of data are inherent in the system of Oliver because a page is a building block that contains data in a memory);

associating a latch/lock with each page in the memory to regulate access to the page, the latch allowing multiple threads to share access to the page for read operations and a single thread to obtain page for write operations (see Abstract, lines 8-10);

in response to the request from a first thread to read a particular page, determining whether the particular page is in the cache without blocking access by other threads to pages in the cache (See Fig. 1 and its corresponding description on col. 3, lines 4-44);

if the particular page is in the cache, attempting to obtain the latch for purposes of reading the particular page (col. 3, lines 39-43); and

allowing the first thread to read the particular page unless a second thread has latched the particular page on an exclusive basis (col. 3, lines 22-29).

Oliver did not explicitly disclose a cache. However, a cache is a form of memory that is taught by Oliver and it is well known in the art at that a cache allows the most frequently used data to store within until it is being replaced by another more frequently used data. Therefore, it would have been obvious to one having an ordinary skill in the

art at the time of the Applicant's invention to implement a cache in the memory 410 of Oliver to take the advantage of the feature set forth in order to improve the data throughput and system performance.

As per claims 2 and 30, Oliver discloses a method, wherein the pages of data comprise database file pages. See col. 1, lines 13-16.

As per claims 3 and 31, a step includes organizing the pages of data in an array is an inherent feature of Oliver since data that store in memory 410 has to store in an array format since memory 410 is a semiconductor memory.

As per claims 4 and 32, a step includes providing an index facilitating access to pages in the cache is an inherent feature of Oliver since a data has to have an address in order to locate and access the data.

As per claims 5 and 33, a step of providing an index includes providing an index based upon a unique identifier assigned to each page in the cache in an inherent feature of Oliver since each data has to have unique address location otherwise system will read incorrect/wrong data and negatively affect the system performance.

As per claims 6 and 34, Oliver discloses a method, wherein said providing step includes maintaining state information for each page in the cache. See col. 3, lines 17-20, wherein the status of data is either locked/unavailable or unlocked/available.

As per claims 7 and 35, wherein assigning a unique identifier to each page is an inherent feature of Oliver since a data has to have an address in order to locate and access the data.

As per claims 8 and 36, unique identifier comprises a page name is an inherent feature of Oliver since a page of data contains information that is apparently be a name of that particular page.

As per claims 9 and 37, Oliver inherently suggesting a method of using an address/identifier (see claims 7 and 35) in order to access a particular data in the memory/cache (col. 1, lines 13-16).

As per claim 10, Oliver discloses the state information maintained for each page includes the latch/lock for regulating access to the page. See col. 1, lines 19-24.

As per claims 12 and 39, Oliver discloses a method, wherein said allowing step includes allowing the first thread to read the particular page concurrently with another thread reading the particular page. See col. 3, lines 4-6.

As per claims 17 and 41, Oliver discloses a method further comprising: if a second thread has latched the particular page on an exclusive basis, attempting to prevent reuse of the particular page. See col. 3, lines 22-29.

As per claim 18, the method wherein said attempting to prevent reuse step includes determining if the particular page is in the cache is an inherent feature of Oliver since the system of Oliver has to search for a particular page in the memory to determine the status of page in order to execute the prevent step if it has already been locked.

As per claims 19, Oliver discloses a method wherein said attempting to prevent reuse step includes incrementing an indicator associated with the particular page so as to indicate the first thread is waiting for access to the particular page. See col. 3, lines 6-16, wherein numReaders is the indicator.

As per claims 20 and 42, Oliver discloses a method comprising: maintaining a list of reusable pages representing pages in the cache that are available for reuse. See col. 4, lines 30-40, wherein the system is maintaining the availability status of the data that might be used by different threads.

4. Claims 13, 14, and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oliver (US Patent 6,029,190) in view of Chauvel et al. (US Pub. 2002/0065992).

As per claims 13 and 40, Oliver did not explicitly disclose a method comprising:
if the particular page is not in the cache, attempting to install a cache entry for the particular page.

However, Chauvel et al. discloses a method of loading data into the cache in response to a miss. See Abstract, lines 4-9.

It would have been obvious to one having an ordinary skill in the art at the time of the Applicant's invention to combine the method of Chauvel et al. with the method of Oliver in order to arrive at the current invention. The motivation of doing so is to load the most recently requested data into the cache so that it will save time in the next process if the thread needs the same page of data.

As per claim 14, Oliver did not explicitly disclose a method, wherein said attempting to install step includes obtaining an unused cache entry.

However, Chauvel et al. discloses a method of obtaining the unused cache entry or least recently used (LRU) cache entry. See paragraph 0115, lines 5-10.

It would have been obvious to one having an ordinary skill in the art at the time of the Applicant's invention to modify the system of Oliver to combine with the system of Chauvel et al. in order to arrive at the current invention. The motivation of doing so is to

determine a page/data in that cache that is not being used very often to be replaced with a more frequently used data in order to provide a more efficient and higher throughput system.

5. Claims 21 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oliver (US Patent 6,029,190) in view of Parson (US Pub. 2005/0166206).

As per claims 21 and 43, Oliver did not explicitly disclose a method, wherein the list of pages is structured as a reusable double-ended queue.

Parson discloses a double-ended queue. See paragraph 0011.

It would have been obvious to one having an ordinary skill in the art at the time of the Applicant's invention to realize the advantage of various method of queuing or sorting the data and determining one that is best suited for the current invention in order to improve the system performance and further enhancing the data processing.

Allowable Subject Matter

6. Claims 11, 15, 16, 22-26, 38, 44-47 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

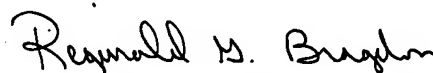
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh D. Vo whose telephone number is (571) 272-0708. The examiner can normally be reached on M-F 9AM-5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Reginald G. Bragdon can be reached on (571) 272-4204. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Thanh D. Vo
Patent Examiner
AU 2189
10/2/2006



REGINALD BRAGDON
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100